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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/713,037	11/17/2003	Nicholas John Doran	048462-5003-01	1140
9629	7590	01/12/2005	EXAMINER	
MORGAN LEWIS & BOCKIUS LLP 1111 PENNSYLVANIA AVENUE NW WASHINGTON, DC 20004			LEE, DAVID J	
			ART UNIT	PAPER NUMBER
			2633	

DATE MAILED: 01/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/713,037

Applicant(s)

DORAN ET AL.

Examiner

David Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM  
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 11/07/2003.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4, 6, 8, 13-14, 18-19, 21, 23, and 28-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Taga et al. (US Patent No. 5,471,333).

Regarding claims 1, Taga teaches a method of communicating using optical pulses comprising: launching the pulses into an optical fiber communication system including a plurality of sections having dispersion of opposite sign (col. 5, table 1: plurality of sections 1-17 have dispersion of opposite sign), wherein the pulses are launched at a wavelength at which the system has normal average dispersion (col. 3, lines 30-33: the system has positive dispersion a.k.a. normal average dispersion).

Regarding claims 2, Taga teaches a method of communicating using optical pulses comprising: transmitting the pulses over an optical communications system including a plurality of sections having dispersion of opposite sign (see previous paragraph), wherein the pulses have a wavelength and magnitude that allow the pulses to propagate in the system under normal average dispersion (col. 4, lines 4-13, and fig. 2).

Regarding claims 3 and 18, Taga teaches a method of communicating using optical pulses, the method comprising: transmitting the pulses over a dispersion-

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managed optical-fiber communication system (col. 3, lines 21-23), wherein at least some pulses are transmitted at a wavelength at which the system exhibits normal average dispersion (col. 4, lines 4-13, and fig. 2).

Regarding claims 4 and 19, Taga teaches that the pulses are solitons (col. 3, line 21).

Regarding claims 6 and 21, Taga teaches that the communication system is dispersion managed using sections of fiber having anomalous dispersion (col. 5, table 5: sections 1, 3, 5, 7, etc.).

Regarding claims 8 and 23, Taga teaches that the communication system is dispersion managed using alternative sections of fiber having opposite signs of dispersion (col. 5, table 1).

Regarding claims 13 and 28, Taga teaches that the system can be used as a WDM system (col. 1, line 34).

Regarding claims 14 and 29, Taga teaches that the communication system is a soliton-based communications system (col. 3, line 21).

3. Claims 1-4, 6-9, 13-15, 17-19, 21-24, 28-30, and 32 are rejected under 35 U.S.C. 102(e) as being anticipated by Golovchenko et al. (US Patent No. 6,243,181).

Regarding claim 1, Golovchenko teaches a method of communicating using optical pulses comprising: launching the pulses into an optical fiber communication system including a plurality of sections having dispersion of opposite sign (col. 4, lines

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30-31) wherein the pulses are launched at a wavelength at which the system has normal average dispersion (col. 5, lines 47-48).

Regarding claims 2, Golovchenko teaches a method of communicating using optical pulses comprising: transmitting the pulses over an optical communications system including a plurality of sections having dispersion of opposite sign (col. 4, lines 30-31), wherein the pulses have a wavelength and magnitude that allow the pulses to propagate in the system under normal average dispersion (col. 5, lines 47-48).

Regarding claims 3 and 18, Golvochenko teaches a method of communicating using optical pulses, the method comprising: transmitting the pulses over a dispersion-managed optical-fiber communication system (col. 5, lines 1-2), wherein at least some pulses are transmitted at a wavelength at which the system exhibits normal average dispersion (col. 5, lines 47-48).

Regarding claims 4 and 19, Golvochenko teaches that the pulses are solitons (col. 4, line 63).

Regarding claims 6 and 21, Golvochenko teaches that the communication system is dispersion managed using sections of fiber having anomalous dispersion (col. 5, line 49).

Regarding claims 7 and 22, Golvochenko teaches that the system is dispersion managed using sections of SSMF (standard) fiber and sections of DCF fiber (col. 4, line 36).

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Regarding claims 8 and 23, Golvochenko teaches that the system is dispersion managed using alternative sections of fiber having opposite signs of dispersion (col. 5, lines 1-3).

Regarding claims 9 and 24, Golvochenko teaches that the system is dispersion managed using dispersion compensating elements (col. 6, lines 41-42: as stated in the specification, the in-line filter is considered to be a DCE).

Regarding claims 13 and 28, Golvochenko teaches that the communication system is a WDM system (col. 5, lines 11-12).

Regarding claims 14 and 29, Golvochenko teaches that the communication is a soliton-based communications system (col. 5, lines 11-12).

Regarding claims 15 and 30, Golvochenko teaches that the communication system has an asymmetric dispersion map (col. 4, lines 31-33).

Regarding claims 17 and 32, Golvochenko teaches launching the pulses with a pulse shape determined according to a dispersion map of the communications system (col. 5, lines 46-51, and col. 6, lines 3-5: the pulse shape is normalized to the intensity of an average soliton in the transmission line).

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 5 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taga in view of Suzuki et al. (US Patent No. 6,005,702).

Regarding claims 5 and 20, Taga teaches all the limitations as applied to claims 3 and 18 above including the limitation that the pulses are return-to-zero when launched (Taga, col. 2, line 57). However, Taga does not expressly disclose that the pulses are phase modulated. Suzuki teaches that the pulses are phase modulated return-to-zero when launched (fig. 6, 31A and 33A). One of ordinary skill in the art would have been motivated to phase modulate the pulses because phase modulation can broaden the spectrum of a signal. Therefore it would have been obvious to phase modulate the pulses as indicated by Suzuki in the system of Taga.

6. Claims 10-12 and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taga in view of Byron (US Patent No. 6,215,929 B1).

Regarding claims 10-12 and 25-27, Taga teaches limitations as applied to claim 3 above except for the limitation that the communication system is dispersion managed using optical gratings. Byron teaches a dispersion managed system (col. 3, lines 58-59) using optical gratings (col. 5, line 52) and an optical circulator (col. 5, line 60). The optical grating disclosed by Byron is a Bragg grating which is a linear element (claim 12). One of ordinary skill in the art at the time of invention would have been motivated to use the optical grating and the optical circulator as indicated by Byron in the system of Taga to help avoid nonlinear effects and to achieve higher quality compressed pulses. Therefore it would have been obvious to one of ordinary skill in the art at the

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time of invention to include the Bragg grating with the circulator of Byron in the system of Taga.

7. Claims 16 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taga in view of Ishikawa et al. (US Patent No. 5,717,510).

Regarding claims 16 and 31, Taga teaches all the limitations as applied to claims 3 and 18 except for the limitation that the pulses are prechirped. Ishikawa discloses prechirping pulses (col. 18, lines 18-23). One of ordinary skill in the art would have been motivated to prechirp the pulses in order to elongate signal duration, to improve communication quality, and to improve the signal to noise ratio. Therefore, it would have been obvious to one of ordinary skill in the art to prechirp the pulses as indicated by Ishikawa in the system of Taga.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Berkey et al. (US Patent No. 5,894,537) is cited to show a dispersion-managed optical system with dispersion values of opposite alternating signs.

Iwatsuki et al. (US Patent No. 5,764,841) is cited to show an optical fiber transmission line with alternating dispersion values.

Antos et al. (US Patent No. 5,613,028) is cited to show the control of dispersion in an optical waveguide.



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Auracher (US Patent No. 5,392,377) is cited to show an optical transmission system with dispersion values of alternating opposite signs in the fiber.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Lee whose telephone number is (571) 272-2220. The examiner can normally be reached on Monday - Friday, 9:00 am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

David Lee

  
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